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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/065,772

11/18/2002

Hwang Choc

24-NS-6042

2406

23465

7590

11/06/2006

EXAMINER

GREENE, DANIEL LAWSON

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ST LOUIS, MO 63102-2740

ART UNIT

PAPER NUMBER

3694

DATE MAILED: 11/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/065,772

Applicant(s)

CHOE ET AL.

Examiner

Daniel L. Greene Jr.

Art Unit

3663

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 January 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. Per applicant's 8/11/2006 response, the objection from section 2 of the previous Office action mailed 4/11/2006 is hereby withdrawn. However upon further review of said response and figures it is noted that coolant inlet 90 does not appear in any of the figures.
2. Accordingly, the drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 90. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Response to Amendment

3. Applicant's 8/11/2006 response has overcome sections 4 and 5a of the previous Office action. Said sections are hereby withdrawn.

Response to Arguments

4. Regarding section 5b of the previous Office action, Applicant's arguments filed 8/11/2006 have been fully considered but they are not persuasive. Although the claims are interpreted in light of the specification, limitations from the specification (or arguments) are NOT imported into the claims. The Examiner must give the claim language the broadest reasonable interpretation the claims allow.

See MPEP 2111.01, which states

While the claims of issued patents are interpreted in light of the specification, prosecution history, prior art and other claims, this is not the mode of claim interpretation to be applied during examination. During examination, the claims **must be interpreted as broadly as their terms reasonably allow**. In re American Academy of Science Tech Center, F.3d, 2004 WL 1067528 (Fed. Cir. May 13, 2004)

Accordingly, the claim language is still vague and indefinite because the claim ITSELF does not set forth exactly what a main coolant flow is and the Examiners interpretation is not repugnant to the normal meaning of the term "main coolant flow channel". It is understood that Applicant would like to restrict the meaning of the term "main coolant flow channel" to mean that area between the inlet orifice and the beginning of the fuel bundle, however these limitations are NOT set forth in the claim and as before, said limitations are not read into the claim.

Accordingly the rejection of section 5b of the previous Office action is maintained and incorporated herein by reference.

5. Applicant's inventive concept is directed towards utilizing various sized orificed apparatus' to control the amount of coolant flowing through a nuclear fuel assembly. Applicant further discloses that said apparatus are capable of being placed within and removed from the inlet of the main coolant channel of said fuel assemblies. Applicant also discloses that said apparatus is capable of adjusting the flow profile of a nuclear reactor core into three discrete "regions" of flow rates, with each region having substantially the same flow rate, with each flow rate different from the other.

In the nuclear art, the concept of altering the coolant flow rate of various regions within a nuclear reactor core, including the fuel cells either individually or in groups is notoriously old and well known, as such is used throughout the nuclear industry to alter neutron moderating effects, neutron reflection, thermal margins, reactivity, thermal stripping, etc., etc. etc.

6. As further expounded upon below, methods of controlling the flow through each regions fuel assembly has been accomplished in the art through the use of many different methods including the use of orifice plates, orifice assemblies, variable pump flow, variable entrance constriction devices, bypass devices, intermediate plenums, etc., etc. etc. As stated in previous office actions, there is no novelty in simply taking a known structure and moving it from one place to another, especially when it performs the same function, i.e. taking an orificed plate from the inlet plenum and placing it instead on/in the fuel assembly itself. As explained in detail below, applicant's inventive concept is nothing more than the use of commonly known techniques of flow control

Art Unit: 3663

already utilized in the nuclear art as shown by ANY of Church, Congdon, Carelli, Otsuji, Zmola et al., other art of record, etc.

7. Regarding section 7 of the previous Office action, Applicant's arguments filed 8/11/06 have been fully considered but they are not persuasive. Accordingly section 7 from said previous Office action is maintained and incorporated herein by reference.

Applicant's arguments are unpersuasive as applicant has not shown that the references do not teach what the examiner has stated they teach, nor has applicant shown that the examiner's reasoning for and manner of combining the teachings of the references is improper or invalid.

It appears Applicant has pulled various lines from the Church specification and appears to be interpreting them in a vacuum without regard for the entire context of the cited passage. Church clearly sets forth the instant invention including variations and alternate embodiments. Applicant has merely pointed to one embodiment set forth within Church and then stated Church doesn't show his invention. This is not proper, as the Examiner has clearly set forth exactly where the instant invention is disclosed within Church. Applicant is again directed specifically to the abstract lines 7+ wherein different hole sizes and numbers are disclosed, column 3 lines 62+ through column 4 line 4, etc.

8. Regarding section 8 of the previous Office action, Applicant's arguments filed 8/11/06 have been fully considered but they are not persuasive. Accordingly said

Art Unit: 3663

section 8 from said previous Office action is maintained and incorporated herein by reference.

Applicant's arguments are unpersuasive as applicant has not shown that the references do not teach what the examiner has stated they teach, nor has applicant shown that the examiner's reasoning for and manner of combining the teachings of the references is improper or invalid.

Applicant is again directed to Column 5 lines 14-40 wherein other locations of orifices and other locations of groups are clearly set forth, for example, "While the illustrated embodiment used only two orifice sizes, more graduations are employed in other embodiments" AND "While the illustrated embodiment shows core locations arranged in three bands in radial succession, many alternative arrangements are provided for. More bands can be used to provide successive steps toward locations with larger orifices and/or locations otherwise provided with faster coolant flow rates."

These passages clearly set forth more than three different groups of coolant flow as well as other locations of the orifices. In this regard, a stub tube is clearly part of the main coolant flow channel of a fuel assembly.

Regarding claim 18 applicant is again directed to column 5 lines 22-24

9. Regarding section 9 of the previous Office action, Applicant's arguments filed 8/11/06 have been fully considered but they are not persuasive. Accordingly said

section 9 from said previous Office action is maintained and incorporated herein by reference.

Applicant's arguments are unpersuasive as applicant has not shown that the references do not teach what the examiner has stated they teach, nor has applicant shown that the examiner's reasoning for and manner of combining the teachings of the references is improper or invalid.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Further, Patterson Fig 2. clearly shows a means of controlling coolant flow separate from the means of controlling coolant flow for each individual main coolant flow channel as indicated by the circles imposed on said Figure 2 below.

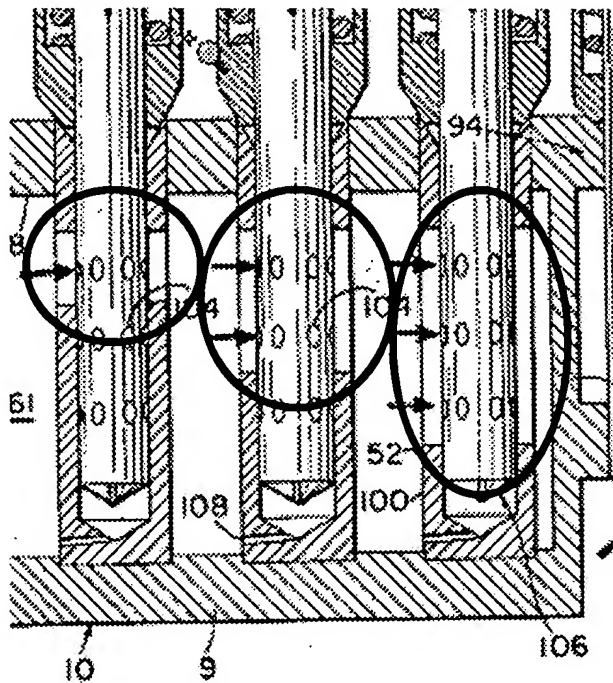


Fig. 2

While patent drawings are not drawn to scale, relationships clearly shown in the drawings of a reference patent cannot be disregarded in determining the patentability of claims. See In re Mraz, 59 CCPA 866, 455 F.2d 1069, 173 USPQ 25 (1972).

10. Regarding section 10 of the previous Office action, Applicant's arguments filed 8/11/06 have been fully considered but they are not persuasive. Accordingly said section 10 from said previous Office action is maintained and incorporated herein by reference.

Applicant's arguments are unpersuasive as applicant has not shown that the references do not teach what the examiner has stated they teach, nor has applicant shown that the examiner's reasoning for and manner of combining the teachings of the references is improper or invalid.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

11. Regarding section 11 of the previous Office action, Applicant's arguments filed 8/11/06 have been fully considered but they are not persuasive. Accordingly said section 11 from said previous Office action is maintained and incorporated herein by reference.

Applicant's arguments Applicant's arguments filed 1/30/2006 have been fully considered but they are not persuasive. Applicant is respectfully invited to review said sections of said office actions because applicant has not shown that the references do not teach **what the examiner has stated they teach**, nor has applicant shown that the examiner's reasoning for and manner of combining the teachings of the references is improper or invalid

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the

rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Applicant's arguments do not comply with 37 CFR 1.111(c) because they do not clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. Further, they do not show how the amendments avoid such references or objections.

Applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Regarding applicants arguments directed towards the "effective diameter", it must be understood that the claims are generic to the interpretation forwarded by the Examiner. As applicant so states the claims refer the diameter of the coolant orifices which does not preclude the Examiners interpretation of an effective diameter.

12. Regarding section 12 of the previous Office action, Applicant's arguments filed 8/11/06 have been fully considered but they are not persuasive. Accordingly said section 12 from said previous Office action is maintained and incorporated herein by reference.

Art Unit: 3663

Applicant is respectfully invited to review said sections of said office actions because applicant has not shown that the references do not teach **what the examiner has stated they teach**, nor has applicant shown that the examiner's reasoning for and manner of combining the teachings of the references is improper or invalid

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Applicant's arguments do not comply with 37 CFR 1.111(c) because they do not clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. Further, they do not show how the amendments avoid such references or objections.

Applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel L. Greene Jr. whose telephone number is (571) 272-6876. The examiner can normally be reached on Mon-Fri 8:30am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James P. Trammell can be reached on (571) 272-6712. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3663

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DIG ~~128~~
2006-10-30



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